

# Ergonomic Hand Tools

## The Problem

Using a conventional hand tool over and over can lead to muscle strain or even a serious injury like carpal tunnel syndrome or tendinitis. Using the wrong tool, or using a tool the wrong way, can strain your hand, wrist, forearm, shoulder, and neck.

## One Solution

**Use an “ergonomic” tool that fits the job.** Many new tools are available that may help prevent muscle and joint injuries. However, some new tools advertised as “ergonomic” have not been carefully designed.

A tool can be considered “ergonomic” when it fits the task you do, fits your hand, allows a good grip, takes less effort, does not require you to work in an awkward position, does not dig into your fingers or hand, and is comfortable and effective. Remember that a tool designed for one task may put more stress on the hand or wrist when used for a different task. For example, needle-nose pliers work well for crimping electrical wire but should not be used for twisting.

## How It Works

Here are some tips for selecting an ergonomic hand tool.

**Handle.** The handle should be non-slip, coated with soft material, and not have sharp edges. You may want to add a soft sleeve to the handle for a better and more comfortable grip. However, make sure the sleeve doesn’t increase the handle diameter to more than

*Avoid tools with finger grooves*



*Tool with soft grip and spring-loaded handle*



*Tool with offset handle can help keep wrist straight*



two inches, which would make it harder to grip. Make sure the sleeve does not slip on the handle. If your task requires high force, pick a tool with a handle longer than the widest part of your hand. The end of the handle shouldn't press continually on your palm. Avoid tools with finger grooves on the grip. Grooves that do not fit your hand can put more pressure on your fingers, which can injure the finger tendons.

**Wrist position.** Pick a tool that keeps your wrist straight when you use it. A tool with a bent handle may work best if you are applying a horizontal force (in the same direction as your straight forearm and wrist). A tool with a straight handle may work best if you are applying an upward or downward force.

**Handle diameter.** For single-handle tools, if the task requires high force, handle diameter should be between 1-1/4 inches and 2 inches. For low-force tasks requiring precision or accuracy, handle diameter should be between 1/4 inch and 1/2 inch.

For double-handle tools, grip span for high-force tasks should be at least 2 inches when closed and no more than 3-1/2 inches when fully open. For low-force tasks requiring precision or accuracy, grip span should be at least 1 inch when closed and no more than 3 inches when fully open.

**Pinching, gripping, or cutting tools.** Choose a tool with a spring-loaded handle that automatically returns to an open position. If continuous high force is necessary, consider using a clamp, a grip, or locking pliers.

## Benefits for the Worker and Employer

When you choose a tool that fits your task, you reduce your chance of developing an injury. You may also get the job done quicker and improve the quality of your work.

## Approximate Cost

Many tool manufacturers now produce ergonomically improved hand tools. Often these are no more expensive than non-ergonomic tools.

## For More Information

- Products related to this solution are described at [www.cpwr.com/simple.html](http://www.cpwr.com/simple.html). Products also may be found on the internet using the following search terms: (type of tool) + “ergonomically designed.”
- Local contractor tool and equipment suppliers or rental companies may be another source of information on products.
- For general information on this solution, check [www.cpwrconstructionsolutions.org](http://www.cpwrconstructionsolutions.org) and [www.elcosh.org](http://www.elcosh.org). Other good information is available at:

[www.thomasnet.com](http://www.thomasnet.com) (in the search box enter “tools: ergonomically designed”)

[vendorweb.humantech.com/browse.asp](http://vendorweb.humantech.com/browse.asp)

[www.advancedergonomics.com/product/tools.htm](http://www.advancedergonomics.com/product/tools.htm)